



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,758	02/23/2004	Katsunori Kawano	118797	6184

25944 7590 01/08/2007
OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

GIESY, ADAM

ART UNIT	PAPER NUMBER
----------	--------------

2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/782,758

Applicant(s)

KAWANO ET AL.

Examiner

Adam R. Giesy

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-17, 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1, 4-9 and 18 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 7, 8A, and 8B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 5, 8, 9, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Moser et al. (hereinafter Moser - Holographic Memory with Localized Recording).

Regarding claim 1, Moser discloses a hologram erasing method comprising erasing a predetermined hologram by irradiating a recording region of the predetermined hologram recorded in an optical recording medium with a reference light beam and a signal light beam (see Part 3 on page 3912) which holds random pattern

Art Unit: 2627

data at the same time (see page 3911 – not that the signal beam passes through an SLM that displays different random data patterns. Therefore, the Examiner interprets this to mean that the signal beam is also made to have random binary data).

Regarding claim 4, Moser discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the method further comprises applying exposure energy, which is no lower than the exposure energy during recording, to the recording region of the predetermined hologram by using the signal light beam and the reference light beam (see page 3911, second column – note that the power for the signal and reference beam is given for a given spot size of 100 micrometers – the erasing also takes place with the same size spot. Therefore, the examiner asserts that the reference suggests using beam of equal power to the recording beams).

Regarding claim 5, Moser discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the method further comprises causing an intensity distribution of the reference light beam on the optical recording medium to substantially coincide with an intensity distribution of the signal light beam (see page 3911, top of second column).

Regarding claim 8, Moser discloses all of the limitations of claim 5 as discussed in the claim 5 rejection above and further that generating the reference light beam, in which a phase is random and a shape and intensity are provided in accordance with a profile of the signal light beam (see page 3911, top of second column – note that the signal light beam specification are given in light of the reference light beam as see in the second column).

Regarding claim 9, Moser discloses all of the limitations of claim 5 as discussed in the claim 5 rejection above and further that irradiating, with the reference light beam, only substantially the same region as the region which is irradiated with the light beam or as a signal light beam defocused region (see page 3911, top of second column – note that the signal light beam specification are given in light of the reference light beam as see in the second column).

Apparatus claim 18 is drawn to the apparatus corresponding to the method of using same as claimed in claim 1. Therefore apparatus claim 18 corresponds to method claim 1, and is rejected for the same reasons of anticipation (obviousness) as used above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moser et al. (hereinafter Moser - Holographic Memory with Localized Recording).

Regarding claim 6, Moser discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above. Moser does not specifically disclose angle multiplex recording.

However, the Examiner takes Official Notice that it is well known in the art to irradiate the hologram with a reference light beam that has the same angle as the

Art Unit: 2627

reference light beam used during recording since the signal beam and the reference beam are used to destroy the recorded interference pattern. Since the interference pattern is initially recorded from the interference between the signal beam and a reference beam and the signal beam does not change except for an increase in intensity, then the reference beam for erasing must be the same (in angle, phase, wavelength, etc.) as the reference beam used for recording, otherwise the interference pattern would not be properly irradiated and therefore would not be deleted.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the hologram erasing method as disclosed by Moser with the application of a recording reference beam and erasing reference beam of the same angle, the motivation being to properly irradiate and erase a hologram recorded by angle multiplex recording.

Regarding claim 7, Moser discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above. Moser does not specifically disclose shift multiplex recording.

However, the Examiner takes Official Notice that it is well known in the art to irradiate the hologram with a reference light beam that has the same wavefront and position as the reference light beam used during recording since the signal beam and the reference beam are used to destroy the recorded interference pattern. Since the interference pattern is initially recorded from the interference between the signal beam and a reference beam and the signal beam does not change except for an increase in intensity, then the reference beam for erasing must be the same (in angle, phase,

Art Unit: 2627

wavelength, etc.) as the reference beam used for recording, otherwise the interference pattern would not be properly irradiated and therefore would not be deleted.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the hologram erasing method as disclosed by Moser with the application of a recording reference beam and erasing reference beam of the same wavefront and position, the motivation being to properly irradiate and erase a hologram recorded by shift multiplex recording.

Allowable Subject Matter

6. Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 is allowable since none of the prior art of record, alone or in combination, disclose all of the limitations of claim 1 as well as the further limitation that the signal light beam further holds data indicating that the recording region is a hologram erasing region.

Claim 3 is allowable since none of the prior art of record, alone or in combination, disclose all of the limitations of claim 1 as well as the further limitation that the signal light beam further holds data indicating the number of times of hologram erasing at the recording region.

7. Claims 10-17, 19, and 20 are allowed over prior art of record.

Independent claim 10 is allowable since the claim recites a hologram erasing method comprising: (a) separating a laser beam into a light beam for a reference light

Art Unit: 2627

beam and a light beam for a signal light beam; (b) intensity modulating the light beam for the signal light beam in accordance with a random pattern, to generate a signal light beam for erasing; (c) generating the reference light beam, in which a phase is random and a shape and intensity are provided in accordance with a profile of the signal light beam for erasing, from the light beam for the reference light beam; (d) irradiating a recording region of a predetermined hologram in an optical recording medium with the signal light beam for erasing; (e) irradiating the region irradiated with the signal light beam for erasing with the reference light beam, at the same time as the region is irradiated with the signal light beam for erasing; (f) destroying the predetermined hologram recorded in the recording region by an interference light beam caused by interference between the signal light beam and the reference light beam.

Claims 11-17 are allowed as being dependent upon the aforementioned independent claim 10.

Independent claim 19 is allowable since the claim recites a hologram erasing apparatus comprising: a light source for outputting a coherent light beam; a beam splitter for separating the coherent light beam into a light beam for a reference light beam and a light beam for a signal light beam; a spatial modulator for intensity modulating the light beam for the signal light beam in accordance with a random pattern, to generate a signal light beam for erasing; and a holographic optical element for generating the reference light beam, in which a phase is random and a shape and intensity are provided in accordance with a profile of the signal light beam for erasing, from the light beam for the reference light beam, wherein a predetermined hologram is

Art Unit: 2627

erased by irradiating a recording region of the predetermined hologram in an optical recording medium with the signal light beam and the reference light beam.

The closest prior art by Moser et al. (hereinafter Moser - Holographic Memory with Localized Recording) discloses a method of selectively erasing holographic data using an information beam and a reference beam. Moser does not disclose that the reference beam is composed of randomly phased light or that a holographic element is used to provide randomly phased light for the reference beam.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. King et al. (US Pat. No. 6,721,076 B2) discloses a system for recording holograms with a multiplexing technique that involves a random phase mask on the reference beam.

b. Curtis et al. (US Pat. No. 5,838,467) discloses a method for processing a stored hologram with a reference beam that is put through a random phase mask.

c. Bernal et al. (US Pat. No. 6,281,993 B1) discloses a phase shifting element for a holographic storage medium.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam R. Giesy whose telephone number is (571) 272-7555. The examiner can normally be reached on 8:00am- 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ARG 12/21/2006



WILLIAM KORZUCH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600